THIN SOLID FILMS VOLUME 234, NUMBERS 1–2, OCTOBER 25, 1993

Contents

Part 1 appears as Vol. 233/1–2

Infrared Ellipsometry

IR spectroscopic ellipsometry: instrumentation and results 307
A. Röseler (Berlin, Germany)

Far-IR spectroscopic ellipsometer 314
K.-L. Barth, D. Böhme, K. Kamarás, F. Keilmann and M. Cardona (Stuttgart, Germany)

An IR phase-modulated ellipsometer using a Fourier transform spectrometer for *in situ* applications 318
A. Canillas, E. Pascual and B. Drévillon (Palaiseau, France)

Spectroscopic IR ellipsometry with imperfect components 323
J. H. W. G. den Boer, G. M. W. Kroesen, M. Haverlag and F. J. de Hoog (Eindhoven, Netherlands)

Determination of the refractive index of metal/ceramic composites and their components by spectroscopic ellipsometry and effective medium theories 327
A. Gombert, W. Graf, A. Heinzel, R. Joerger, M. Köhl and U. Weimar (Freiburg, Germany)

IR ellipsometry of the highly anisotropic materials: α-SiO_2 and α-Al_2O_3 332
J. Humlíçek (Brno, Czech Republic) and A. Röseler (Berlin, Germany)

IR ellipsometry investigations of N_2O-nitrided silicon oxide thin films on silicon 337
M. Weidner, A. Röseler and M. Eichler (Frankfurt, Germany)

Spectroscopic IR ellipsometry of [100] and [001] oriented $YBa_2Cu_3O_{7-\delta}$ films 342
E. Wold, J. Bremer and O. Hunderi (Trondheim, Norway)

Extension of spectroscopic ellipsometry to the far infrared 346
G. Dittmar, V. Offermann, M. Pohlen and P. Grosse (Aachen, Germany)

Broadband spectroscopic ellipsometry based on a Fourier transform spectrometer 352
A. Gombert, M. Köhl and U. Weimar (Freiburg, Germany)

IR spectroscopic ellipsometry: instrumentation and applications in semiconductors 356
G. Zalczer (Gif sur Yvette, France), O. Thomas, J.-P. Piel and J.-L. Stehlé (Bois-Colombes, France)

In situ investigation by IR ellipsometry of the growth and interfaces of amorphous silicon and related materials 363
R. Ossikovski, H. Shirai and B. Drévillon (Palaiseau, France)

In situ diagnosis of a Si:H–metal interface reactions using IR spectroscopic reflectometry 367
Y. Toyoshima (Tsukuba, Japan)

New Developments

Multichannel polarization state detectors for time-resolved ellipsometry 371
R. M. A. Azzam (New Orleans, LA, USA)

Spectroscopic ellipsometry under external excitation 375
G. Jin, H. El Rhaleb, J. P. Roger, A. C. Boccara (Paris, France) and J. L. Stehlé (Bois-Colombes, France)

Peculiarities of non-linear spectroscopic ellipsometry of initially isotropic substances 380
I. I. Gancheryonok, S. Saikan and T. Kushida (Osaka, Japan)

Improved rotating analyser–polarizer type of scanning ellipsometer 385
L.-Y. Chen, X.-W. Feng, Y. Su, H.-Z. Ma and Y.-H. Qian (Shanghai, People's Republic of China)

A novel method for stabilizing the photoelastic modulator used in a polarization modulated spectroscopic ellipsometer 390
T. Fukazawa, M. Sano, Yu. Yoshida and N. Sakayanagi (Tokyo, Japan)

Regression calibration method for rotating element ellipsometers 395
B. Johs (Lincoln, NE, USA)

Photoellipsometry: a modulation spectroscopy method applied to n-type GaAs 399
Y.-M. Xiong, P. G. Snyder and J. A. Woollam (Lincoln, NE, USA)

Elsevier Sequoia

High precision UV–visible–near-IR Stokes vector spectroscopy 402
J.-Th. Zettler, Th. Trepk (Berlin, Germany), L. Spanos, Y.-Z. Hu (Chapel Hill, NC, USA) and W. Richter (Berlin, Germany)

A new and high precision achromatic ellipsometer: a two-channel and polarization rotator method 408
J. Monin, H. Sahsah and O. Brevet-Philibert (Saint Etienne, France)

Spectroscopic ellipsometry: a new tool for "on line" quality control 412
D. Zahorski (Bois Colombes, France), J. L. Mariani (Rousset, France), L. Escadafals (Bois Colombes, France) and J. Gilles (Rousset, France)

Modelling—Data Analysis

Data analysis for spectroscopic ellipsometry 416
G. E. Jellison, Jr. (Oak Ridge, TN, USA)

Numerical aspects of the implementation of effective-medium approximation models in spectroscopic ellipsometry regression software 423
Ph. J. Roussel, J. Vanhellemont and H. E. Maes (Leuven, Belgium)

Possibilities and limitations of ellipsometry 428
G. Jungk (Berlin, Germany)

Ellipsometry and reflectance of inhomogeneous and anisotropic media: a new computationally efficient approach 432
E. Toussaere and J. Zyss (Bagneux, France)

Studies on inhomogeneous transparent optical coatings on transparent substrates by spectroscopic ellipsometry 439
P. Chindaudom and K. Vedam (University Park, PA, USA)

Techniques for ellipsometric measurement of the thickness and optical constants of thin absorbing films 443
W. A. McGahan, B. Johs and J. A. Woollam (Lincoln, NE, USA)

Determination of the sign of Δ in spectroscopic ellipsometry without a quarter-wave plate: calculation and applications 447
J. P. Piel (Bois-Colombes, France)

Spectroscopic ellipsometry characterization of the index profile in inhomogeneous thin films 451
J. P. Piel (Bois-Colombes, France)

Variable angle spectroscopic ellipsometry: application to poled polymers for non-linear optics 454
E. Toussaere and J. Zyss (Bagneux, France)

Modelling of ellipsometric data of inhomogeneous TiO_2 films 458
G. Parjadis de Larivière, J. M. Frigerio (Paris, France), F. Bridou (Orsay, France) and J. Rivory (Paris, France)

Optical properties of plasma polymer films (hexamethyldisiloxane) 463
R. Rochotzki, M. Arzt, F. Blaschta, E. Kreyßig and H. U. Poll (Chemnitz, Germany)

Ellipsometric spectra and fractional derivative spectrum analysis of polyaniline films 468
D. Mo, Y. Y. Lin, J. H. Tan, Z. X. Yu, G. Z. Zhou, K. C. Gong, G. P. Zhang (Guangzhou, China) and X.-F. He (Vancouver, BC, Canada)

Liquids

Ellipsometry and reflectivity at the Brewster angle: tools to study the bending elasticity and phase transitions in monolayers at liquid interfaces 471
S. Hénon and J. Meunier (Paris, France)

An ellipsometric study of layered droplets 475
M. P. Valignat, N. Fraysse, A. M. Cazabat, F. Heslot and P. Levinson (Paris, France)

Interfacial behaviour of non-ionic surfactants at the silica–water interface revealed by ellipsometry 478
F. Tiberg, B. Lindman and M. Landgren (Lund, Sweden)

An ellipsometric study of adsorption isotherms 482
P. Levinson, M. P. Valignat, N. Fraysse, A. M. Cazabat and F. Heslot (Paris, France)

IR spectroscopic ellipsometry: transmission studies on liquid crystals 486
J. Reins, E. H. Korte and A. Röseler (Berlin, Germany)

Optical Properties and Anisotropic Effects

Ellipsometric study of specular reflection from a naturally optically active medium 491
M. P. Silverman (Hartford, CT, USA) and J. Badoz (Paris, France)

Characterization of radiative surface modes and anisotropy in Ag/SiO_2 multilayers, by visible and IR ellipsometry 496
A. Bichri (Paris, France), O. Hunderi (Trondheim, Norway), J. Lafait (Paris, France) and E. Wold (Trondheim, Norway)

Ellipsometry of ultrathin Mo and Si films 500
P. Široký (Praha, Czech Republic), J. Sobota (Brno, Czech Republic), J. Seidl and L. Jastrabík (Praha, Czech Republic)

Spectroscopic variations of optical constant and emissivity of $Pt-Al_2O_3$ cermet thin films 503
J. P. Segaud, B. Drévillon, E. Pascual, R. Ossikovski, G. Monnier and L. Rimbourg (Palaiseau, France)

Relationship between microstructure and optical properties in high T_c superconductors 508
G.-J. Babonas, R. Dagys, V. Kregždė, G. Pukinskas (Vilnius, Lithuania), E. Belokoneva, L. Leonyuk and A. Vetkin (Moscow, Russian Federation)

Surface characterization of metal plates exposed to atomic oxygen in space 512
J. S. Brodkin, L. C. Sengupta, W. Franzen and P. L. Sagalyn (Watertown, MA, USA)

Mid- and near-IR ellipsometry of $Y_{1-x}Pr_xBa_2Cu_3O_7$ epitaxial films 518
J. Humlíček, K. Kamarás, J. Kircher, H.-U. Habermeier, M. Cardona (Stuttgart, Germany), A. Röseler (Berlin, Germany) and J.-L. Stehlé (Bois Colombes, France)

Optical properties of the Y–Ba cuprates: mainly a band structure point of view 522
J. Kircher, S. Gopalan and M. Cardona (Stuttgart, Germany)

Spectroellipsometric study of phase transitions in d and f metals in ultrahigh vacuum 527
M. M. Kirillova, Yu. V. Knyazev and Yu. I. Kuzmin (Ekaterinburg, Russian Federation)

Optical study of the doping effect of oxygen in $YBa_2Cu_3O_y$ and $Bi_2Sr_2CaCu_2O_{8+\delta}$ single crystals 531
L. V. Nomerovannaya, A. A. Makhnev and M. M. Kirillova (Ekaterinburg, Russian Federation)

Spectroscopic ellipsometric and magneto-optical study of Cu/Fe multilayers 536
Yu. V. Kudryavtsev, O. Yu. Bzhestowski (Kiev, Ukraine) and L. Smardz (Poznan, Poland)

Optical studies of Cu–Ni, Pd–Ni and Co–Pt multilayers by conventional and synchrotron radiation ellipsometry 538
S. Logothetidis, J. Petalas, N. K. Flevaris (Thessaloniki, Greece) and R. L. Johnson (Hamburg, Germany)

Ellipsometric spectroscopy of valence states in amorphous metallic alloys 542
M. U. Belyi, L. V. Poperenko and I. A. Schaikevich (Kiev, Ukraine)

Specular optical activity in α-HgS 545
A. R. Bungay, Yu. P. Svirko and N. I. Zheludev (Southampton, UK)

Spectroscopic ellipsometry on $1T-TiSe_2$ 549
T. Buslaps, R. L. Johnson (Hamburg, Germany) and G. Jungk (Berlin, Germany)

Invisible layers in ellipsometry 553
E. G. Bortchagovsky and O. M. Getsko (Kiev, Ukraine)

Analysis of the oxidation of polycrystalline zinc selenide by spectroscopic ellipsometry and photothermal deflection spectroscopy 557
E. Masetti, M. Montecchi (Rome, Italy) and M. P. da Silva (Natal, Brazil)

Spectroellipsometric characterization of lanthanide-doped TiO_2 films obtained via the sol–gel technique 561
M. Gartner, C. Parlog and P. Osiceanu (Bucharest, Romania)

Investigation of ferrite surface treatments by spectroscopic ellipsometry 566
M. Dancygier, L. Benitah (Velizy, France) and J.-M. Frigerio (Paris, France)

Author Index 573

Subject Index 575